UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/767,593	CHRON ET AL.
	Examiner	Art Unit	
	SHIRLEY X. ZHANG	2444	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _09 March 2009_.
2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _2,5-7,10,11,18-20,22,29 and 30_ is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) _2,5-7,10,11,18-20,22,29 and 30_ is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.
4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

Claims 1-2, 5-7, 10-12, 16-20 and 22 were previously pending;

Claims 1, 12 and 16-17 have been cancelled;

The rest of the claims have been amended;

Claims 29-30 are newly added;

Claims 2, 5-7, 10-11, 18-20, 22 and 29-30 are now pending;

Continued Examination Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee set forth in

37 CFR 1.17(e), was filed in this application after final rejection. Since this application is

eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e)

has been timely paid, the finality of the previous Office action has been withdrawn pursuant to

37 CFR 1.114. Applicant's submission filed on March 9, 2009 has been entered.

Response to Amendments

2.   Applicant's arguments and amendments filed on have been carefully considered. As

applicant's arguments focus mainly on limitations newly added to the claims, the examiner's

response can be found below in the "Claim Rejections" section.

3.   New independent claims 29-30 are submitted with the RCE to replace the independent

claims 1 and 12. However, it is the Examiner's opinion that the new claims, although describing

the invention in a different manner, do not present any limitations that substantially differentiate

the claimed invention from the prior art reference to put the pending claims in condition for

allowance.

4.   Rejections of claims 1 and 12 are withdrawn because the claims have been cancelled.

Claim Rejections - 35 USC § 112

Claim Objections

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the
> subject matter which the applicant regards as his invention.

5.   Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for

failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention.

The claim language makes it unclear to the Examiner whether a single Ethernet packet or

a plurality of standard Ethernet packets was sent to the client computer.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

6.   **Claims 2, 5-7, 10-11, 18-20 and 29-30** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Miloushev et al. (U.S. 2002/0120763, hereinafter "**Miloushev**"), in view of

IETF RFC 1094 ("Network File System Protocol Specification", version 2.0, hereinafter "**RFC

1094**").

Regarding claim 29, Miloushev disclosed a system for virtualizing multiple network

attached stores, said system comprising:

a plurality of network attached stores connected to an internal communications network

(Miloushev, Fig. 1, "file server 1" to "file server 7"),

wherein each of said plurality of network attached stores corresponds to a plurality of

network attached store computers (Miloushev, Fig. 1, "file server 1" to "file server 7");

a client computer, running a client application, connected to an external communications

network (Miloushev, Fig. 1, any one of "CLT 1" to "CLT 4");

a virtualizer connected to said internal communications network and said external

communications network (Miloushev, Fig. 1, "file switch 100"),

wherein said virtualizer:

advertises a network address to said client computer for storage (Miloushev, Fig.

6 and [0061], [0170]), said network address being accessed by a connection-oriented

network attached store protocol used by said client computer (Miloushev, [0123], "NFS"

or "CIFS");

receives a request for storage from said client computer and determines that said

request is a single packet request (Miloushev, Figs. 2-4, and [0132], "write request");

determines which single network attached store of said plurality of network attached stores will process said request for storage based on configuration information relating to said plurality of network attached stores (Miloushev, [0137] disclosed that the switch 100 examines the write request and decides which of the file servers, i.e., network attached stores, to forward the request); and

routes said request for storage to a single network attached store, corresponding to a single network attached store computer (Miloushev, [0137] disclosed that the switch 100 forwards the write request to the chosen file server);

wherein said single network attached store computer:

processes said request for storage (Miloushev, [0143]);

constructs a response, said response including information relating to processing of said request for storage and data to be included in said response (Miloushev, Fig. 4 and [0143] disclosed that the file server forms a transaction/write response 206);

packetizes said response, as a single packet response and sends said single packet response to said virtualizer (Miloush, Fig. 4 and [0143] disclosed that the file server sends the response back to the file switch 100; as NFS or CIFS is used as the file system protocol, it is inherent that the file server must packetize the response before sending it the the file switch);

wherein said virtualizer:

determines that said response is a single packet response (Miloushev, Fig. 4 and [0144]); and

forwards said response to said client computer (Miloushev, Fig. 4 and

[0144]); and

wherein said client computer passes said response to said client

application (Miloushev, [0145]).

Regarding claim 2, Miloushev disclosed the communications network of claim 29.

Miloushev further disclosed

an internal network of connection nodes connecting said virtualizer with said plurality of

network-attached store computers (Miloushev, Fig. 1);

a computer system providing network attached store service according to a network file

system protocol (Miloushev, [0123], "NFS" or "CIFS");

a plurality of communications network adapters by which said computer system connects

to said internal communications network, and a plurality of storage network adapters by which

said computer system connects to said internal storage network (Figs. 1, 14 and [0124]).

As to claim 5, Miloushev disclosed the communications network of claim 29.

Milousheve further disclosed that the system comprises an Ethernet networking hardware

and medium access protocols for facilitating communication within said internal communication

network (Miloushev, [0122] disclosed that the file switch is preferably equipped with multiple

high-speed network interfaces, such as gigabit or higher Ethernet interfaces).

As to claim 6, Miloushev disclosed the communications network of claim 29.

Milousheve further disclosed that the system comprises a Transmission Control Protocol / Internet Protocol suite for facilitating communication between said plurality of network-attached store computers and said plurality of client computers (Miloushev, [0133] discloses that the file switch contains a TCP protocol stack).

As to claim 7, Miloushev disclosed the communications network of claim 29.

Milousheve further disclosed that the system comprises a storage access protocol for facilitating communication between a storage component within said communications network and remaining components within said communications network (Miloushev, [0123] discloses that the file switch preferably supports multiple industry standard network file protocols, such as NFS and CIFS).

As to claim 10, Miloushev disclosed the communications network of claim 29.

Milousheve further disclosed wherein said virtualizer comprises a network router (Miloushev, [0133] discloses that the typical operation of the file switch involves receiving file protocol requests, such as login, tree connect/mount, file open, file read/write, etc., from clients 112 and 113 and forwarding, or switching these requests to one or more of the file servers 101 through 107, therefore the file switch has the function of a network router).

As to claim 11, Miloushev disclosed the communications network of claim 29.

Milousheve further disclosed that the system comprises a communication virtualizer file switch connected to a client computer and a server computer for sending requests from one of a

plurality of client computers to a network-attached store and from said network-attached store

computer back to said one of said plurality of client computers (Miloushev, Fig. 5 and [0133]

disclosed that the file switch forwards client requests to the file servers; [0134] disclosed that the

file switch sends responses from the server back to the client).

Regarding claim 30, Miloushev disclosed a computer-implemented method for

virtualizing multiple network attached stores, the method comprising:

initiating, by a client application running on a client computer, a request for storage

(Miloushev, Figs. 2-4 and [0133-0145]);

packetizing, by said client computer, said request for storage as a single packet request

(Miloushev, Figs. 2-4 and [0133-0145]);

sending, by said client computer, said request for storage to a network address, advertised

by a virtualizer, using a connection-oriented network attached store protocol (Miloushev, Figs. 2-

4 and [0133-0145]);

receiving, by said virtualizer, said request for storage (Miloushev, Figs. 2-4 and [0133-

0145]);

determining by said virtualizer that said request is a single packet request (Miloushev,

Figs. 2-4 and [0133-0145]);

determining, by said virtualizer, which single network attached store of a plurality of

network attached stores will process said request for storage based on configuration information

relating to said plurality of network attached stores (Miloushev, Figs. 2-4 and [0133-0145]);

routing said request for storage to said single network attached store (Miloushev, Figs. 2-4 and [0133-0145]);

processing said request for storage in a network attached store computer corresponding to said single network attached store (Miloushev, Figs. 2-4 and [0133-0145]);

constructing a response by said single network attached store computer, said response including information relating to processing of said request for storage and data to be included in said response (Miloushev, Figs. 2-4 and [0133-0145]);

packetizing said response, by said network attached store computer, as a single packet response (Miloushev, Figs. 2-4 and [0133-0145]);

sending, by said network attached store computer said single packet response to said virtualizer (Miloushev, Figs. 2-4 and [0133-0145]);

determining, by said virtualizer, that said response is a single packet response (Miloushev, Figs. 2-4 and [0133-0145]);

forwarding, by said virtualizer, said response to said client computer (Miloushev, Figs. 2-4 and [0133-0145]); and

passing, by said client computer, said response to said client application (Miloushev, Figs. 2-4 and [0133-0145]).

For more information on Examiner's rationale for mapping the reference Miloushev's teaching to the claim elements, see the rejection of claim 29 above.

As to claim 18, Miloushev disclosed the communications network of claim 30.

Miloushev further disclosed wherein said chosen client computer is configured for

receiving said response from said one of said plurality of communication virtualizers

(Miloushev, Fig. 4 and [0144-0145]);

de-packetizing said response (it is inherent in the file system protocol NFS or CIFS that

uses TCP/IP stack); and

routing said corresponding response to an initiating application (Miloushev, [0123]

disclosed that the file switch preferably supports multiple industry standard network file

protocols, such as NFS and CIFS, which implies that there must be a NFS or CIFS application on

the client to receive and process responses to the requests).

As to claim 19, Miloushev disclosed the communications network of claim 30.

Miloushev further disclosed wherein single packet request and said single packet

response have a packet sequence number of zero and a set of end-of-request flag (Miloushev,

[0123], TCP/IP based "NFS" and "CIFS" inherently has a way to mark the end of a request,

which could be the length of the payload combined with the fragment offset in IP header)

As to claim 20, disclosed the communications network of claim 19.

Miloushev further disclosed wherein said virtualizer determines which of said plurality of

network-attached store computers to transmit said request for storage to by examining said

zeroth packet in said request (Miloushev, [0137] discloses that upon receipt of the first frame

201, which contains the request header 200, the switch 100 recognizes that this frame signifies

the beginning of a new message, examines the header 200 and decides to which of the file

servers to forward the whole message).

7.   **Claim 22** are rejected under 35 U.S.C. 103(a) as being obvious Miloushev and RFC

1094, further in view of IETF RFC 791, hereinafter "**RFC 791**'.

As to claim 22, Miloushev disclosed the communications network of claim 21.

Miloushev further disclosed that said one of said plurality of network-attached store

computers sends a standard Ethernet packet to said one of said plurality of communication

virtualizers in reply to a client computer's request (Miloushev, [0122] discloses that the file

switch is preferably equipped with multiple high-speed network interfaces, such as gigabit or

higher Ethernet interfaces);

Miloushev did not explicitly disclose but it is inherent in RFC 791 that said

communication virtualizer dividing said standard Ethernet packet into a plurality of standard

Ethernet packets to send to said client computer as a response comprising a single Ethernet

packet (RFC 791, Section 2.3 "Function Description" discloses that IP employs the

fragmentation technique that segments large packets into a series of smaller packets of a size that

the underlying physical medium supports, as each type of physical media has it own Maximum

Transmission Unit (MTU) requirement; In other words, if the communication virtualizer

receives from the network attached store computer as a response a single packet of large size,

e.g., a jumbo Gigabit Ethernet packet of 9000 bytes, the IP protocol built into the communication

virtualizer will divide said large packet into a plurality of standard 1500-byte Ethernet packets

that is acceptable to the regular 100Mps Ethernet connecting the said virtualizer to client

computers).

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to SHIRLEY X. ZHANG whose telephone number is (571)270-

5012. The examiner can normally be reached on Monday through Friday 7:30am - 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, William Vaughn can be reached on (571) 272-3922. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shirley X. Zhang/
Examiner, Art Unit 2444
5/21/2009
/William C. Vaughn, Jr./

Supervisory Patent Examiner, Art Unit 2444